

NEW TINEID GENUS MACULISCLEROTICA GEN. NOV. AND THREE NEW SPECIES FROM CHINA (LEPIDOPTERA, TINEIDAE, MEESSIINAE)

XIAO Yun-Li^{1,2}, LI Hou-Hun^{1*}

1. College of Life Sciences, Nankai University, Tianjin 300071, China

2. College of Life Science and Engineering, Huanggang Normal University, Huanggang 438000, China

Abstract A new tineid genus *Maculisclerotica* gen. nov. is established to accommodate three species identified in China, viz. *M. triangulidens* sp. nov. *M. curvispinea* sp. nov. and *M. truncatidens* sp. nov.. Images of adults and genitalia as well as the drawings of the wing venations are provided, along with a key to the three species.

Key words Lepidoptera, Tineidae, Meessiinae, *Maculisclerotica*, new genus, new species, China.

1 Introduction

Maculisclerotica gen. nov. is established based on the three new species collected from Zhejiang, Henan and Hainan Provinces in China. The three species are similar to the members of *Eudarcia* Clemens, 1860, *Xeringinia* Robinson et Nielsen, 1993 and *Unilepidotricha* Xiao et Li, 2008 of the subfamily Meessiinae by the antennae with two annuli of narrow scales in each flagellomere, the forewings having similar patterns, and the sternum or anteriorly bearing one special structure in male. These characters are absent in other tineid genera. However, the special abdominal structure is obviously different among these genera. It is a patch of many small well sclerotized tacklike processes in the new genus, but a patch of numerous piliform scales in *Unilepidotricha*, two patches of many robust oval scales in *Xeringinia*, and two subspherical wrinkled glands in *Eudarcia*. Moreover, the new species have a well defined discocellular cross-vein in the hindwings, which is absent in the above three genera. Based on these differences, we propose a new genus *Maculisclerotica* gen. nov. in the subfamily Meessiinae to accommodate the above three new species.

2 Material and Methods

All the 89 specimens examined in this paper were collected in the past ten years by light traps in mountains and nature reserves in Zhejiang, Henan and Hainan provinces, China. The genitalia dissection followed the methods and techniques outlined by Li and Zheng (1996). Images of the adults were taken with a Nikon D300 camera and the genitalia were taken with an Olympus C-7070 camera. The type specimens of the new species are deposited in the Insect Collection, College of Life Sciences, Nankai University, Tianjin, China.

3 Taxonomy

Maculisclerotica gen. nov.

Type species: *Maculisclerotica triangulidens* sp. nov.

Generic characters. Small-sized moths. Head covered with erect piliform scales. Labial palpi projecting, second segment with several lateral and apical bristles. Maxillary palpi five-segmented, folded. Antennae about 0.6–0.7 times length of forewing, with a row of pecten on scape; flagellar segments each covered with two annuli of narrow scales.

Forewings with R_5 reaching costal margin, CuA_2 absent; retinaculum in male originating from subcosta, tongue-shaped, oblique, curled apically. Hindwings with M_1 terminating at dorsal margin, M_1 stalked with M_2 , discocellular cross-vein present; frenulum in female being two slender bristles or a single fused robust bristle. Fore tibia without epiphysis; hind tibia with medial spurs at about basal 1/4.

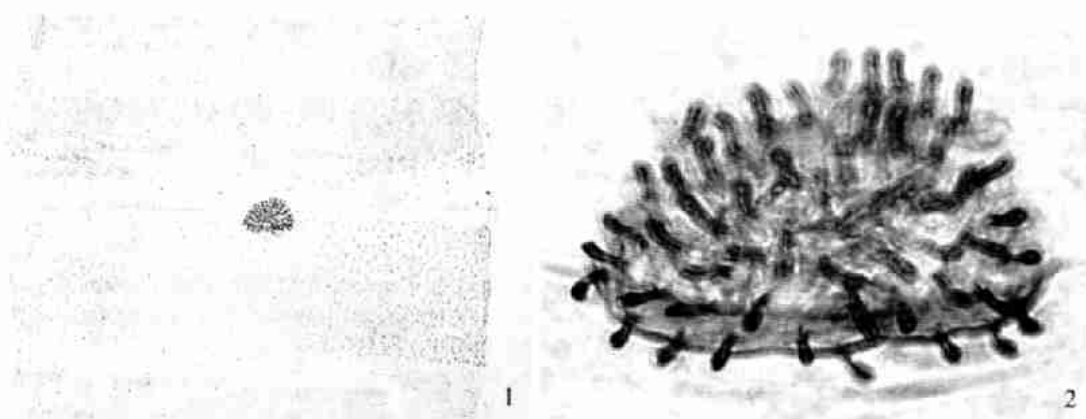
Abdomen. Tergum without sclerotisation within sclerotized frame, fully separated from tergum; tergum strongly sclerotized on lateral margin; sternum with two sclerotized kidney-shaped plates in anterior half, which sometimes are much sclerotized laterally and fused with apodemes; one suboval patch located at membrane between sterna and , consisting of many tack-shaped, well sclerotized processes (Figs. 1–2); segment lacking coremata in male, segment without corethrogyne in female.

Male genitalia. Tegumen narrow or medially narrowed, fused with narrow vinculum, forming a loop. Uncus a pair of lobes, separated, covered with long distal hairs. Gnathos developed and sclerotized. Valvae with basal portion sclerotized, distal portion membranous and covered with long hairs; sacculus developed; apodemes present. Juxta developed, articulated with

The research was supported by the National Natural Science Foundation of China (30670251) and the Educational Commission of Hubei Province (Q200727002).

* Corresponding author, E-mail: lihoun@nankai.edu.cn

Received 3 Apr. 2009, accepted 10 Aug. 2009.



Figs. 1-2. Abdominal terga. 1. Patch of tack-shaped process anterior to fourth sternum. 2. Enlarged patch.

aedeagus. Aedeagus not longer than valvae, without cornutus.

Female genitalia. Ovipositor, apophyses anteriores and posteriores median length or very short, apophyses anteriores basally having dorsal and ventral rami. Ostium developed. Corpus bursae somewhat pyriform; signum present or absent.

Distribution. China (Hainan, Henan, Zhejiang).

Diagnosis. *Maculisclerotica* gen. nov. is allied to *Unilepidotricha* Xiao et Li and *Xeringinia* Robinson et Nielsen, but can be distinguished from them by the patch anterior to the fourth sternum composed of many small sclerotized tack-shaped processes. *Unilepidotricha* has such a patch too, but consists of numerous piliform scales; *Xeringinia* has two such patches made up of numerous small robust oval scales. The differences can also be found in the wing venations. In the forewings, M_3 is existent, R_4 and R_5 are separated and CuA_2 is absent in the new genus, but both M_3 and CuA_2 are absent in *Unilepidotricha*, and R_4 is fused with R_5 , both M_3 and CuA_2 are present in *Xeringinia*. The hindwings have obvious discocellular cross-vein in the new genus, which is absent in other two genera. In addition, the new genus has developed gnathos and sacculus in the male genitalia, but the gnathos is absent in *Xeringinia* and the sacculus is absent in *Unilepidotricha*.

Etymology. The generic name is derived from the Latin prefix *macul-* (= patch), and *scleroticus* (= sclerotized), in reference to the new genus having one suboval patch composed of many small sclerotized processes anterior to the fourth sternum. It is feminine in gender.

Key to the species of *Maculisclerotica* gen. nov. based on the male and female genitalia

1. Male2
Female4
2. Valvae broadly rounded or somewhat truncate apically3
Valvae triangular apically *M. triangulidens* sp. nov.

3. Gnathos arched, with a small spinous process at apex
..... *M. curvispinea* sp. nov.
Gnathos dagger-shaped, without process at apex
..... *M. truncatidens* sp. nov.
4. Signum present5
Signum absent *M. truncatidens* sp. nov.
5. Ostium circle-shaped *M. triangulidens* sp. nov.
Ostium somewhat cup-shaped *M. curvispinea* sp. nov.

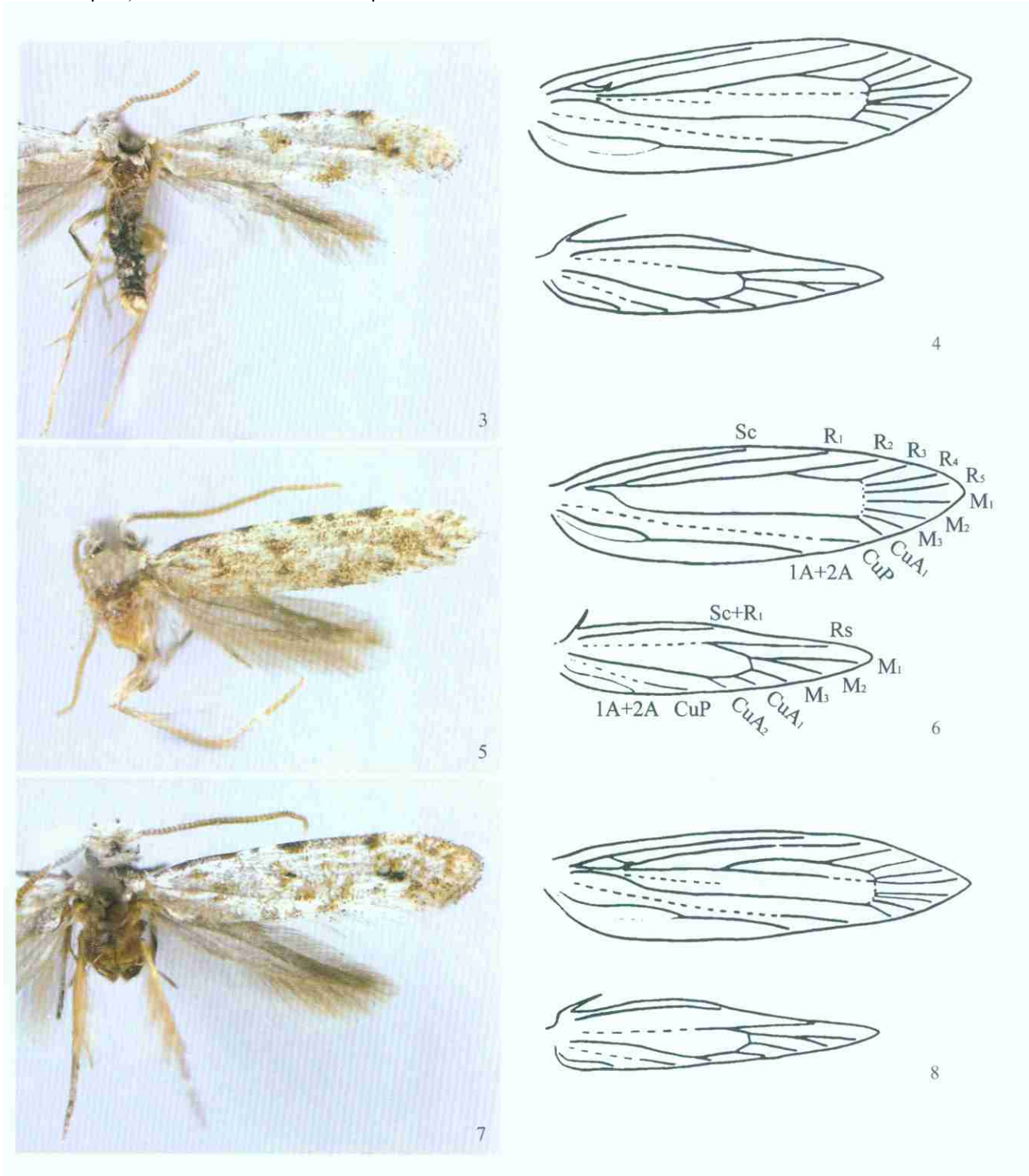
Maculisclerotica triangulidens sp. nov. (Figs. 3-4, 9, 12)

Adult (Figs. 3-4). Wingspan 8.0-8.5 mm. Head white. Labial palpi dark brown. Antennae with scape white, flagellar segments each covered with two faint annuli of ochreous brown and ochreous white scales. Thorax and tegulae white. Forewings with M_1 and M_2 connate; white, with scattered dark brown and ochreous brown scales; five to six small dark brown spots arranged discontinuously along costal margin, two relatively larger spots located at about costal $1/2$ and $2/3$; larger yellowish brown spots at about middle and end of cell, and at tornus; cilia white, sparsely mixed with dark brown near apex. Hindwings with M_1 and M_2 stalked, length about $4/7$ of M_1 ; frenulum in female being two slender bristles, grey; cilia grey, length about twice width of hindwing.

Male genitalia (Fig. 9). Tegumen narrow, band-shaped. Uncus relatively small, narrowed from base to pointed apex, fused with tegumen at base. Gnathos irregularly rectangular, narrowed slightly at middle, widened distally; apex concave at middle, somewhat protruding dorsoapically. Valvae with length about 2.4 times of width, basal $2/5$ heavily sclerotized, distal $3/5$ membranous; apex triangular, with a small toothlike process; costa folded, its basal $1/3$ trapeziform and fused with apodeme, distal $2/3$ elongate, slender, sclerotized dorsally; sacculus subtriangular, with a slender and curved distal process; apodemes subrectangular, obtusely rounded apically. Saccus somewhat bowl-shaped, anterior margin obtusely rounded. Juxta irregularly rhombic, protruding at middle anteriorly; posterior

margin loop-shaped , encircling aedeagus. Aedeagus about 0.68 times length of valvae , thick basally , tapering to curved apex , with 4-8 small toothlike spines at distal

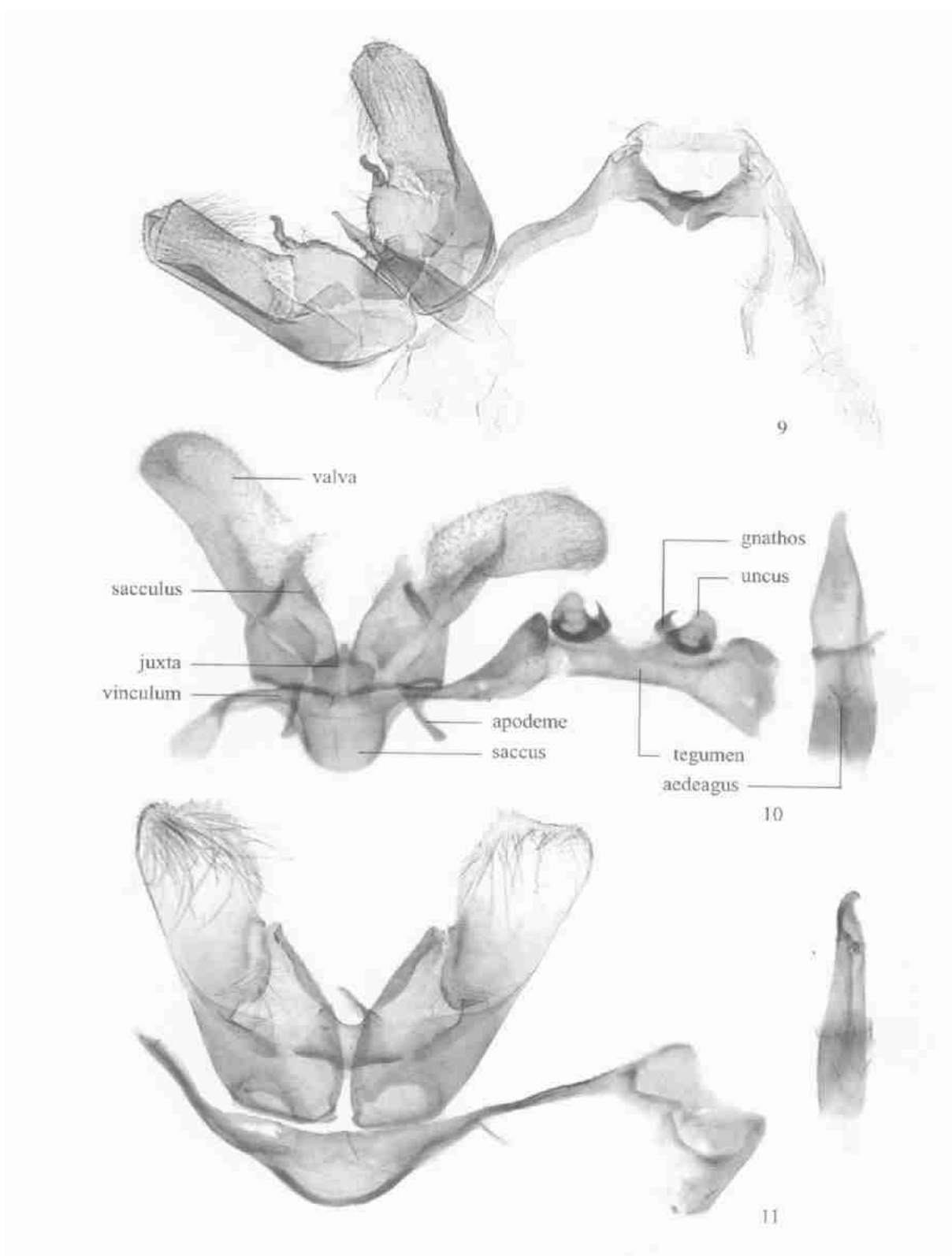
1/3 , articulated with juxta by a sclerotized band at basal 3/5.



Figs. 3-8. Adults and wing venations of *Maculisclerotica* spp. 3-4. *M. triangulidens* sp. nov. 5-6. *M. curvispinea* sp. nov. 7-8. *M. truncatidens* sp. nov.

Female genitalia (Fig. 12). Ovipositor about 0.38 times length of abdomen. Apophyses posteriores about 0.55 times length of abdomen and 1.43 times length of apophyses anteriores ; ventral rami of apophyses anteriores short , dorsal rami developed , arched , about

2/5 length of apophyses. Eighth tergum and sternum membranous. Ostium bursae circular , heavily sclerotized ventrally , membranous dorsally. Ductus bursae sclerotized in basal 1/5. Paired signa set at center of corpus bursae , each with about 20 small sclerotized



Figs. 9-11. Male genitalia of *Maculisderotica* spp. 9. *M. triangulidens* sp. nov. (holotype, gen. slide no. XYL05034). 10. *M. curvispinea* sp. nov. (holotype, gen. slide no. XYL08013). 11. *M. truncatidens* sp. nov. (holotype, gen. slide no. XYL08011).

toothlike processes.

Diagnosis. This new species is similar to *Unilepidotricha gracilicurva* Xiao et Li. It can be distinguished from the latter by the patch anterior to

fourth sternum in male composed of many small sclerotized tack-shaped processes, the presence of M_3 in forewings, the irregularly rectangular gnathos and the triangular sacculus in male. In *U. gracilicurva* Xiao et Li,

the patch anterior to the fourth sternum in male consists of numerous piliform scales, M_3 is absent in the forewings, the male gnathos is long horn-shaped and the sacculus is absent. In the female genitalia, the eighth tergum is membranous, the ostium bursae is circular, and the paired signa are located at the center of the corpus bursae in the new species; whereas the eighth tergum is sclerotized, the ostium bursae is somewhat inverted nail-shaped in dorsal 2/3, and the paired signa are positioned at the entrance and at posterior 2/5 of the corpus bursae respectively.

Holotype , Wuyanling, Taishun County (27°33' N, 119°42' E), Zhejiang Province, 680 m, 28 July 2005, coll. XIAO Yun-Li, gen. slide no. XYL05034. **Paratypes**: 1 , 1 , same data as holotype; 3 , Qingliangfeng, Lin'an County (30°14' N, 119°43' E), Zhejiang Province, 900 m, 8-10 Aug. 2005, coll. XIAO Yun-Li.

Distribution. China (Zhejiang).

Etymology. The specific name is derived from the Latin *triangulus* (= triangular) and the postfix *-dens* (= dentate), in reference to the triangular valva with a small toothlike process at apex.

Maculisclerotica curvispinea sp. nov. (Figs. 5-6, 10, 13)

Adult (Figs. 5-6). Wingspan 9.0-16.0 mm. Head white. Labial palpi dark brown but white in distal half of third segment. Antennae white on scape, flagellar segments each covered with two annuli of ocherous brown and ocherous white scales. Thorax and tegulae dark brown. Forewings with all veins separate; white, with scattered dark brown and ocherous brown scales, which form four discontinuous, transverse, outward arced stripes at about 1/5, 2/5, 3/5 and 4/5, darker anteriorly. Hindwings with M_1 and M_2 stalked, about 1/4 length of M_1 ; frenulum in female a single fused robust bristle, ocherous grey; cilia ocherous white, length about equal to its width.

Male genitalia (Fig. 10). Tegumen with anterior margin straight, caudal margin sinuate. Uncus subtriangular, joined with tegumen basally, rounded apically. Gnathos slender, curved in an arc, with a small sclerotized spinous process. Valvae with length about 3.5 times of width, basal 2/5 sclerotized, distal 3/5 membranous, apex broadly rounded; costa folded in basal 1/5, trapeziform; sacculus subtriangular, obtusely rounded at apex; apodemes elongate digitiform. Saccus somewhat bowl-like, rounded anteriorly. Juxta with anterior 2/3 quadrate, concave slightly at middle on anterior margin, posterior 1/3 triangular. Aedeagus about 0.83 times length of valva, distal 2/5 triangular, apex obtusely pointed; with a sclerotized band at 1/2, articulated with juxta.

Female genitalia (Fig. 13). Ovipositor about 0.28

times of abdomen in length. Apophyses posteriores about 0.36 times of abdomen and 1.52 times of apophyses anteriores in length; dorsal and ventral rami of apophyses anteriores developed, about 2/5 and 1/4 length of apophyses respectively. Eighth tergum rhombic, laterally joined with dorsal rami of apophyses anteriores; sternum membranous. Ostium bursae somewhat cup-shaped, with dense microtrichia; anterior 1/3 semicircular ventrally, somewhat W-shaped dorsally; caudal margin laterally joined with ventral rami of apophyses anteriores. Ductus bursae densely covered with tubercular microtrichia. Signum single, umbellar, positioned at center of corpus bursae, consisting of numerous small dentate processes.

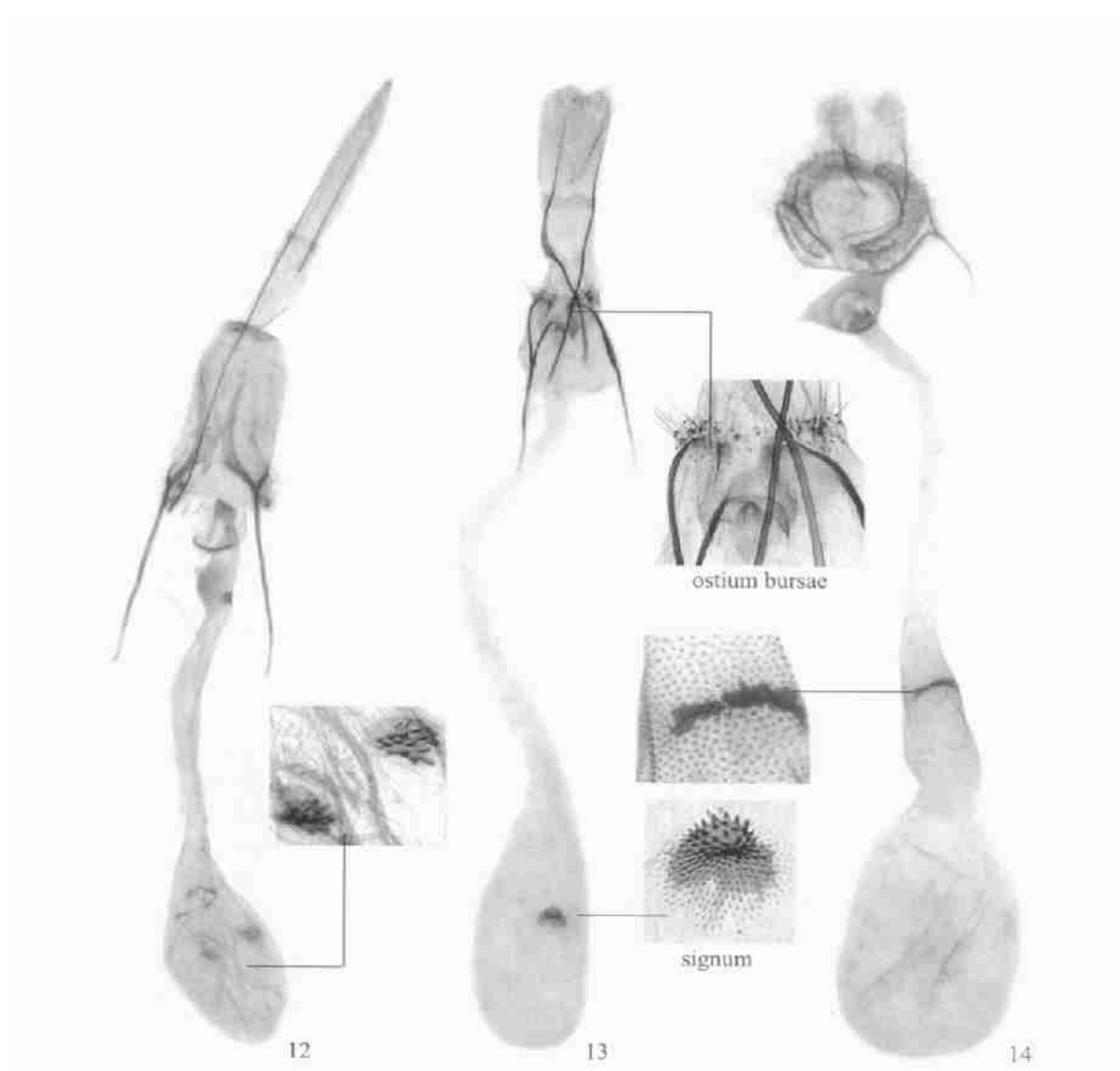
Diagnosis. The new species resembles *M. triangulidens* sp. nov., but can be differentiated from it by the broad subtriangular uncus with obtusely rounded apex, the slender and curved gnathos, the valvae obtusely rounded at apex, and the juxta quadrate in anterior 2/3 and triangular in posterior 1/3 in the male genitalia; the sclerotized and subrhombic eighth tergum, the cup-shaped ostium bursae, and the corpus bursae with a single signum in the female genitalia. In *M. triangulidens* sp. nov., the uncus is narrow with pointed apex, the gnathos is irregularly rectangular, the valvae are triangular at apex, and the juxta is irregularly rhombic in the male genitalia; the eighth tergum is membranous, the ostium bursae is circle-shaped, and the signa are paired in the female genitalia.

Holotype , Baotianman, Neixiang County (33°02' N, 111°50' E), Henan Province, 1200 m, 23 May 2006, coll. ZHANG Xu and LV Jin-Mei, gen. slide no. XYL08013. **Paratypes**: 2 , Shuiliandong, Tongbai County (32°21' N, 113°24' E), Henan Province, 300 m, 11 Sep. 2000, coll. LI Hou-Hun and O. Karsholt; 1 , 7 , Huangshi'an Xixia County (33°18' N, 111°29' E), Henan Province, 890 m, 16-19 July 1998, coll. LI Hou-Hun; 1 , Xiaguan, Neixiang County (33°02' N, 111°50' E), Henan Province, 650 m, 12 July 1998, coll. LI Hou-Hun; 1 , Huanglianshu, Jiuyan City (35°04' N, 112°35' E), Henan Province, 700 m, 7 June 2000, coll. YU Hai-Li.

Etymology. The specific name is derived from the Latin prefix *curv-* (= curved) and the Latin *spineus* (= spiny), in reference to the curved gnathos with a small spiny apical process.

Maculisclerotica truncatidens sp. nov. (Figs. 7-8, 11, 14)

Adult (Figs. 7-8). Wingspan 7.5-10.5 mm. Head white. Inner side of labial palpi ocherous white or white, outer side dark brown or ocherous brown except ocherous white or white at apex of third segment. Antennae with scape white, flagellar segments each covered with two annuli of ocherous brown and white



Figs. 12-14. Female genitalia of *Maculisdertica* spp. 12. *M. triangulidens* sp. nov. (paratype, gen. slide no. XYL08015). 13. *M. curvispinea* sp. nov. (paratype, gen. slide no. XYL08026). 14. *M. truncatidens* sp. nov. (paratype, gen. slide no. XYL08024).

scales. Thorax and tegulae white mixed with ochereous brown. Forewings with R_4 close to R_5 , M_1 close to M_2 at base; ground color white, with scattered ochereous brown scales; six small dark brown spots arranged along costal margin; three dark brown or ochereous brown, discontinuous, transverse stripes extending obliquely from costal $1/4$, $1/2$ and $2/3$ to $1/3$, $1/2$ and $4/5$ of dorsum; cilia white, mixed with ochereous brown near apex. Hindwing with M_1 and M_2 stalked for about half length of M_1 , frenulum in female a single fused robust bristle, dark grey; cilia ochereous grey, length about twice of its width.

Male genitalia (Fig. 11). Tegumen slightly concave on both anterior and posterior margins. Uncus subtriangular, basally fused with tegumen, broadly

rounded at apex. Gnathos dagger-shaped, with an obtuse apex. Valvae length about 2.83 times of width, basal $3/7$ sclerotized, distal $4/7$ membranous; apex almost truncate, with a dentation of about 10 small teeth along ventral half of apex and distal half of ventral margin; costa folded in basal $1/3$, subtrapeziform, apically fused with apodeme; sacculus triangular, obtusely rounded at apex. Saccus arc-shaped, anteriorly broad and rounded. Juxta irregularly trapeziform, anterior margin slightly convex, posterior margin loop-shaped, encircling aedeagus. Aedeagus about 0.58 times length of valvae, beak-shaped distally, with three small spinous processes at distal $1/5$.

Female genitalia (Fig. 14). Ovipositor and apophyses very short; apophyses posteriores about 0.83

times of anteriores; dorsal and ventral rami of apophyses anteriores developed, about 1/2 length of anteriores. Eighth tergum and sternum shallowly concave medially, fused with each other and forming a circle, densely covered with long hairs. Ostium bursae somewhat bowl-shaped, anteriorly broad and rounded, caudally convex in V shape, laterally joined with ventral rami of apophyses anteriores. Eighth tergum and sternum, ostium bursae and ductus bursae with numerous lepidote microtrichia, denser in anterior 1/4 of ductus bursae where a semicircle is formed; signum absent.

Diagnosis. The new species resembles *M. triangulidens* sp. nov. and *M. curvispinea* sp. nov., but obviously differs from them in the dagger-shaped gnathos, the valvae with a dentation of about ten small teeth along ventral half of the apex and the distal half of the ventral margins, the irregularly trapeziform juxta, and the arc-shaped saccus. Whereas the gnathos is irregularly rectangular in *M. triangulidens* sp. nov., slender and curved in an arc in *M. curvispinea* sp. nov.; the juxta is irregularly rhombic in *M. triangulidens* sp. nov., trapeziform in basal 2/3, triangular in distal 1/3 in *M. curvispinea* sp. nov.; the valvae have no dentations and the saccus is somewhat bowl-shaped in the latter two species. In the female genitalia, the ovipositor and apophyses are very short, the eighth tergum and sternum are laterally fused to form a loop, and the

signum is absent in *M. truncatidens* sp. nov. These female characters are distinctly different from those of the latter two species.

Holotype , Mt. Jianfeng, Ledong County (18°44' N, 109°10' E), Hainan Province, 940 m, 4-7 June 2007, coll. ZHANG Zhi-Wei and LI Wei-Chun, gen. slide no. XYL08011. **Paratypes**: 43 , 20 , same data as holotype; 2 , 1 , Nancha, Mt. Bawang, Changjiang County (19°16' N, 109°03' E), Hainan Province, 600 m, 10 June 2007, coll. ZHANG Zhi-Wei and LI Wei-Chun; 2 , Mt. Wuzhi (18°50' N, 109°42' E), Hainan Province, 700 m, 19 May 2007, coll. ZHANG Zhi-Wei and LI Wei-Chun.

Etymology. The specific name is derived from the Latin *truncatus* (= truncate) and the Latin postfix *-dens* (= dentate), in reference to the valvae apically truncate, with a dentation of about ten small teeth.

REFERENCES

- Li, H-H and Zheng, Z-M 1996. Methods and techniques of specimens of Microlepidoptera. Journal of Shaanxi Normal University (Natural Sciences Edition), 24 (3): 63-70.
- Robinson, G. S. and Nielsen, G. S. 1993. Tineid genera of Australia (Lepidoptera). CSIRO Publications, Melbourne. 344 pp.
- Xiao, Y-L and Li, H-H 2008. New Tineid Genus and Species (Lepidoptera, Tineidae) from China. Sinica Entomotaxonomia, 30 (1): 31-35.

中国地谷蛾亚科一新属三新种（鳞翅目，谷蛾科）

肖云丽^{1,2} 李后魂^{1*}

1. 南开大学生命科学学院 天津 300071

2. 黄冈师范学院生命科学与工程学院 湖北黄冈 438000

摘要 记述我国地谷蛾亚科 Meessiinae 1 新属：骨斑地谷蛾属 *Maculiscleritica* gen. nov., 及 3 新种：三角骨斑地谷蛾 *M. triangulidens* sp. nov., 弯刺骨斑地谷蛾 *M. curvispinea* sp. nov. 和截齿骨斑地谷蛾 *M. truncatidens* sp. nov.。提供新种成虫外形、翅脉和雌雄外生殖器特征图及分类检索表。模式标本保存在南开大学生命科学学院昆虫标本室。

骨斑地谷蛾属，新属 *Maculiscleritica* gen. nov.

模式种： *Maculiscleritica triangulidens* sp. nov.

新属与合腺地谷蛾属 *Unilepidotricha* Xiao et Li 和 *Xeringinia* Robinson et Nielsen 相似，但新属雄性腹部第 3 与第 4 节腹板间有 1 个由钉状骨化突起构成的斑（图 1~2），前翅 M_3 脉存在， R_4 和 R_5 脉分离， CuA_2 脉消失，后翅具中室端叉脉；颧形突和抱器腹发达。合腺地谷蛾属腹部第 3 与第 4 节腹板间具 1 个由许多鳞片构成的斑，前翅 M_3 和 CuA_2 消失，后翅无中室端叉脉；无抱器腹。*Xeringinia* 属腹部具 2 个由粗鳞片构成的椭圆形斑，前翅 R_4 和 R_5 脉愈合、 M_3 和 CuA_2 脉存在，后翅无中室端叉脉；缺颧形突。

三角骨斑地谷蛾，新种 *Maculiscleritica triangulidens* sp. nov. (图 3~4, 9, 12)

鉴别特征 前翅约在前缘 1/2 和 2/3 处各具 1 枚较大的暗褐色斑，在翅中间、中室末端和臀角处各具 1 枚较大的黄褐色斑。雄性颧形突呈不规则矩形，末端中间内凹；抱器瓣末端三角形，具 1 齿状小突起；阳茎基环呈不规则菱形。雄性交配孔环状；囊突 2 个。

正模，浙江泰顺乌岩岭，680 m，2005-07-28，肖云丽采，玻片号 XYL05034。副模：1，1，采集记录同正模；3，浙江临安清凉峰，900 m，2005-08-08~10，肖云丽采。

弯刺骨斑地谷蛾，新种 *Maculiscleritica curvispinea* sp. nov. (图 5~6, 10, 13)

鉴别特征 前翅约在 1/5、2/5、3/5 和 4/5 处各具 1 条有间断的暗褐色混杂赭褐色的横带。雄性颧形突细长，弧形弯曲，末端具 1 骨化刺状小突起；抱器瓣末端宽圆，抱器柄长、指状；阳茎基环基部 2/3 近方形，后部 1/3 三角形。雌性

*通讯作者。

交配孔近 U 形; 囊突 1 个。

正模, 河南内乡宝天曼, 1 200 m, 2006-05-23, 张续、吕锦梅采, 玻片号 XYL08013。副模: 2, 河南桐柏水帘洞, 300 m, 2000-09-11, 李后魂、Karsholt 采; 1, 7, 河南西厦黄石庵, 890 m, 1998-07-16 ~ 19, 李后魂采; 1, 河南内乡夏馆, 650 m, 1998-07-12, 李后魂采; 1, 河南济源黄楸树, 700 m, 2000-06-07, 于海丽采。

截齿骨斑地谷蛾, 新种 *Maculisclerotica truncatidens* sp. nov.
(图 7 ~ 8, 11, 14)

鉴别特征 前翅约在前缘 1/4、1/2 和 2/3 处各具 1 条不

关键词 鳞翅目, 谷蛾科, 骨斑地谷蛾属, 新属, 新种, 中国.

中图分类号 Q969.424.5

连续的暗褐色或赭褐色横带分别斜至后缘 1/3、1/2 和 4/5 处。雄性颚形突匕首状; 抱器瓣末端近截形, 沿末端腹半部和腹缘端半部约有 10 个齿状小突起; 阳茎基环近梯形。雌性产卵管和前后表皮突很短; 腹部第 8 节背板和腹板宽短, 两侧愈合呈环, 交配孔近碗状; 囊突无。

正模, 海南乐东尖峰岭, 940 m, 2007-06-04 ~ 07, 张志伟、李卫春采, 玻片号 XYL08011。副模: 43, 20, 采集记录同正模; 2, 1, 海南昌江霸王岭南叉, 600 m, 2007-06-10, 张志伟、李卫春采; 2, 海南五指山, 700 m, 2007-05-19, 张志伟、李卫春采。